

REMARKS

Claims 1-9 and 11-21 are all the claims pending in the application.

Claims 1-9 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Matsuo (US 5,645,923) in view of Pinnavaia (US 6,414,069), as evidenced by Wiley (Wiley Database of Polymer Properties).

In addition, claims 11-15 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Matsuo in view of Pinnavaia, as evidenced by Wiley.

Further, claims 16-19 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Matsuo in view of Pinnavaia, as evidenced by Wiley, and further in view of Stein (US 6,322,860).

Applicant respectfully traverses the rejections.

The Examiner cites Matsuo as teaching an inorganic coating layer and an organic-inorganic hybrid coating layer on a substrate of polyethylene naphthalate, and acknowledges that Matsuo does not disclose a base film containing an inorganic layered compound or that the base film has a linear thermal expansion coefficient of 40 ppm/°C or lower. To make up for the deficiencies of Matsuo, the Examiner cites Pinnavaia as teaching a barrier film containing an inorganic layered compound for the purpose of providing desired reinforcement to the barrier film. *See* Pinnavaia at col. 10, lines 43-45. The Examiner takes the position that it would have been obvious to one of ordinary skill in the art to have reinforced the base film of Matsuo with an inorganic layered compound, in order to obtain a reinforced base film which provides the desired reinforced base support.

Applicant respectfully disagrees. It is respectfully submitted that there is no motivation to combine Matsuo and Pinnavaia, and thus, a *prima facie* case of obviousness has not been established.

The Examiner considers Matsuo as disclosing a substrate film material made of polyethylene naphthalate. However, polyethylene naphthalate is not used in the working examples of Matsuo and is merely listed as one of many "preferable" materials for the substrate. In this regard, the Examiner's attention is directed to column 5, lines 49-57 where Matsuo discloses that:

As the substrate 2, it is possible to use polymeric sheet or film materials commonly used as substrates for packaging materials, among which a suitable material may be selected according to uses. Such materials can be preferably exemplified by polyolefins such as polyethylene and polypropylene, polyesters such as polyethylene terephthalate, polybutylene terephthalate and polyethylene naphthalate, polyamides such as nylon-6 and nylon-66, polyvinyl chloride, polyimide, and copolymers of these.

Polyethylene terephthalate is also exemplified as a preferable material for the substrate, and is actually used in the working examples of Matsuo. Accordingly, one of ordinary skill in the art reading Matsuo would recognize that polyethylene naphthalate is less preferable or inferior to, or at most, equal to, polyethylene terephthalate in the context of Matsuo's invention. Thus, one of ordinary skill in the art would not be motivated to specifically select polyethylene naphthalate as a substrate material from the various materials disclosed in Matsuo. In addition, as shown in the Rule 132 Declaration filed January 26, 2006, polyethylene naphthalate is in fact much superior to polyethylene terephthalate with respect to gas barrier properties, in the context of the present invention. This is an unexpectedly superior result.

Specifically, in the present invention, polyethylene naphthalate provides superior gas

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barrier properties compared to polyethylene terephthalate, as shown in the Rule 132 Declaration filed on January 26, 2006, which is an unexpectedly superior result. *See Table* at page 6 of the Rule 132 Declaration filed on January 26, 2006. The Examiner takes the position that the excellent gas barrier properties (*e.g.*, oxygen transmission rate and water vapor transmission rate) are not recited in the present claims. However, it is respectfully submitted that there is no requirement that unexpected properties be recited in the claims to rebut a *prima facie* case of obviousness. Even if there were such a legal requirement, which there is not, the recitation in the present claims of a "gas barrier film" connotes a film having a high oxygen transmission rate and a high water vapor transmission rate, to persons skilled in the art.

Furthermore, in an obviousness rejection, there must be some teaching or suggestion in the prior art to combine the references' teachings. In this case, there is no teaching or suggestion that would motivate one of ordinary skill in the art to use the inorganic layered compound of Pinnavaia in the base film of Matsuo to arrive at the claimed invention.

First, Pinnavaia simply discloses that the inorganic layered compound is useful as various agents, including a barrier film agent. *See* col. 10, line 43. However, Pinnavaia does not disclose any specific advantage or benefit obtained when the inorganic layered compound of Pinnavaia is used as a barrier film agent. In addition, there is no disclosure in Pinnavaia as to whether the inorganic layered compound can be used in a substrate/base film or in a layer used to form a barrier film. Thus, Pinnavaia does not provide any teaching that would motivate one of ordinary skill in the art to specifically select the inorganic layered compound as a barrier film agent from the various agents disclosed in Pinnavaia and use the inorganic layered compound of Pinnavaia in the substrate of Matsuo.

Second, the disclosure relied upon by the Examiner regarding the use of the inorganic layered compound incorporated with a polyester, relates to the use of the inorganic layered compound as a polymer reinforcement agent. That is, a polymer precursor or polymer melt can be intercalated into the galleries of the layered silicate to form polymer-clay nanocomposites. *See col. 14, lines 53-55.* However, Pinnavaia discloses a polymer reinforcement agent as being different from a barrier film agent. *See col. 10, line 43.* In addition, Pinnavaia does not disclose that such polymer-clay nanocomposites can be used as a substrate for a barrier film. Further, Matsuo does not disclose the use of polymer-clay nanocomposites as substrates for the barrier film. Therefore, there is no teaching or suggestion in Pinnavaia that would motivate one of ordinary skill in the art to modify the substrate of Matsuo by adding an inorganic layered compound.

For the foregoing reasons, it is respectfully submitted that one of ordinary skill in the art would not be motivated to modify the substrate of Matsuo by incorporating the inorganic layered compound of Pinnavaia to arrive at the claimed invention according to claim 1.

Moreover, each of claims 2-9 and 11-19 depend, directly or indirectly, from independent claim 1. Therefore, it is respectfully submitted that these claims are patentable for at least the same reasons as claim 1.

In view of the above, withdrawal of the rejections, reconsideration and allowance of claims 1-9 and 11-21 are respectfully requested.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at

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the telephone number listed below.

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Respectfully submitted,



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